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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

CHANG, EDITH M

ART UNIT PAPER NUMBER

2637

DATE MAILED: 02/22/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/936,153	Applicant(s) IKEDA ET AL.	
	Examiner Edith M. Chang	Art Unit 2637	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 November 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 and 17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☒ Claim(s) 17 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 April 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed November 30, 2005, have been fully considered but they are not persuasive.

Argument: Applicants argue that Park et al. fails to teach or suggest, "a random sequence generating circuit for generating said PBRS (pseudo-random binary sequence) based on the initial value set in accordance with the frequency of said broadcast channel".

Response: Park et al. discloses a digital broadcast receiving apparatus in FIG.1, to receive the SP (scattered pilot) and CP (continual pilot) in the transmitted frame of a broadcast channel (column 1, lines 40-45, column 9, lines 45-50 & column 10, lines 10-15). It is well-known as administrated prior art (APA) describing in Background Art section of the specification on page 2 lines 19-22 of the instance application that the CP and SP among the pilot signals are BPSK (binary phase shift keying) modulated by a PRBS output corresponding to the frequency (the carrier number) of the broadcasting channel and the initial value given to the circuit generating the PRBS differs according to the segment number (page 3, lines 15-20) or the frequency position in each broadcasting channel (page 6, lines 10-13 of the instance application specification). Hence, Park et al. inherently provides a PRBS based on the initial value set in accordance with the frequency (the carrier number/the segment

number/the frequency position) of the broadcast channel modulating the CP and SP signals in the received frame.

Argument: Applicants argue that Klank et al. does not make up for the deficiencies of Park et al not explicitly specifying the PRBS in the pilot signal decoding section of the OFDM system.

Response: Park et al. discloses the CP and SP signals in the received OFDM frame modulated by a PRBS output corresponding to the frequency of the broadcast channel in the digital broadcast receiving apparatus, furthermore, Klank et al. explicitly specify the well-known CP and SP signals of a digital broadcast receiving apparatus are derived from a pseudo-random binary sequence W_k for each of the transmitted carriers k (the frequency of the broadcast channel, column 1, lines 50-53 '293) of the OFDM system. Therefore, Klank et al. provides the well-known CP and SP signals of the digital broadcast receiving apparatus are derived from a pseudo-random binary sequence for each of the broadcast channels as disclosed by the Park et al.

Claim Objections

2. Claim 9 is objected to because of the following informalities:

Claim 9, line 8: "demodulated sub signals" should be "the sub signals" as stated in the page 8 of the Remarks filed on November 30, 2005.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-4, 6-12 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Park et al. in view of Klank et al. (US 6,330,293 B1).

To **claims 1, 7 & 9**, Park teaches an OFDM receiver for digital broadcasting system in the FIG. 1 and column 1 lines 33-34.

in FIG.1, the receiver comprises the pilot signal decoding section 700 demultiplexing the transmitted data (the main signal) and SPC (scattered pilot cells), CPC (continual pilot carriers), and TPS (transmission parameter signaling pilots) sub signals in the frames (column 1 lines 40-55) of the OFDM signal received from tuner through AID (500), and rotator (510) (column 3 lines 57-63),

The FFT processor 710 with the rearrangement memory 720 initialized/supplied by table rearranging section accordingly to (730 of FIG.3) reproduce the sub signals (column 3 lines 59-63);

The controller (570) for controlling reproduction of the transmitted data (the main signal); and

The decoder (FEC DECODER of FIG. 1) to decode the interleaved signal from the FPGA#2 the equalizing and interleaving section 600 (column 3, lines 49-55).

The equalizing and interleaving section 600 deinterleaving the demultiplexed data from the section 700 using the parameter (REF, SPC of FIG.13), the FIG.13 is the detail

input/output low of the equalizing and deinterleaving section 600.

However, Park does not explicitly specify the pseudo-random binary sequence (PRBS) in the pilot signal decoding section of the OFDM system. Klank et al. teaches the pilot signals are derived from a pseudo-random binary sequence (PRBS) W_k for each of the transmitted carriers k (column 1 lines 50-53 '293). The sequence W_k may also define the start phase of the TPS carrier information (column 1, lines 53-56 '293). As Park having the pilot detecting section with the table rearranging section and rearrangement memory to reproduce the data and sub signals (FIG.1 '030), at the time of the invention, it would have been obvious to one of ordinary skill in the art to have the PRBS taught by Klank in Park's pilot signal decoding section to provide the reference signals/data to the table arrangement section for decoding the pilots in order to provide an accurate, efficient, and robust system of synchronization suitable for wireless reception (column 1, lines 55-60).

To **claims 2 & 10**, Park teaches the OFDM broadcast signal (column 1 lines 33-34) with transmitted data (the main signal) and SPC (scattered pilot cells), CPC (continual pilot carriers), and TPS (transmission parameter signaling pilots) sub signals in the frames (column 1 lines 40-45).

To **claims 3 & 11**, since the DVB (column 1 lines 33-35) and DAB (digital audio broadcasting) both standards choose OFDM scheme, hence Park's receiver receiving the sound data in the transmitted OFDM signals.

To **claims 4 & 12** Park teaches the SPC (scattered pilot cells), CPC (continual pilot carriers), and TPS (transmission parameter signaling pilots) pilot signals contained in the sub signals in the frames (column 1 lines 40-45) of the OFDM signal received from tuner through A/D (500), and rotator (510) (column 3 lines 57-63) and

In FIG. 13, the equalizer (640) of the equalizing and deinterleaving section (600) for correcting the distortion/interference in the data according to the pilot signal (SPC).

To **claim 6**, In FIG. 1, Park teaches the receiver comprises the pilot signal decoding section 700 decoding the SPC (scattered pilot cells), CPC (continual pilot carriers), and TPS (transmission parameter signaling pilots) sub signals in the frames (column 1 lines 40-45) of the OFDM signal received according to the sub channel numbers assigned to the pilot/sub signals (column 1, lines 40-55).

To **claim 8**, in FIG. 13 and column 1 lines 40-55, Park teaches the parameter SPC is set according to the broadcasting channel for the SPC, and

further a control circuit 640 for setting the parameter in the equalizing and deinterleaving section 600. To claim 14, in FIG. 1, Park teaches the FEC decoder, and it is well known in the art that the forward error correction decoder provides the error signal when the received signal is not correct.

5. Claims 5 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Park et al. (US 6,470,030 B1) in view of Klank et al. (US 6,330,293 B1) as applied to claim 1 above, and further in view of Mitsubori et al. (JP 11-145929-A).

9. To **claims 5 & 13**, the modified/combined Park et al. 's receiver with Klank et al. 's PRBS generator does not list the transmission control signal included the OFDM frame, however Mitsubori et al. teaches the transmission control signal in their OFDM transmitting system ([0001]). As Park et al.'s receiver with the pilot/reference signal decoding section providing the ability to decode the

transmission control signal (another reference signal as the pilot signals) in the OFDM frame taught by Mitsubori et al., at the time of the invention, it would have been obvious to a person of ordinary skill in the art to receive the transmission control signal to have the information regarding the transmission such as the content of a modulation of each subcarrier, an interleave configuration, etc. for the purpose of obtaining the frame synchronization of a signal recovery (as stated in sections [0011] & [0012]).

Allowable Subject Matter

10. Claim 17 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

11. The following is a statement of reasons for the indication of allowable subject matter:

The prior art of record fails to teach or suggest, alone or in a combination, among other things, at least a digital broadcast receiving apparatus as a whole, the combination of elements and features, which includes the received broadcast signal transmitted using a bandwidth of the frequency of the broadcast channel overlapping that of another channel, the received broadcast signal generated by combining sub signals modulated using a PBRS generated based on an initial value, wherein the initial value is changed based on a sub channel number of the other channel as recited in the claims.

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Edith M. Chang whose telephone number is 571-272-3041. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay K. Patel can be reached on 571-272-2988. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Edith Chang
February 13, 2006

A handwritten signature in black ink, appearing to read 'Khai Tran', written in a cursive style.

KHAI TRAN
PRIMARY EXAMINER